



NJ Affordable Green Case Study

Brick Church Commons, East Orange New Jersey

A once vacant downtown site in East Orange will soon have 3 new energy efficient buildings providing 104 units of housing and 37,500 sf of retail space. Developed by RPM Development Group, Brick Church Commons combines a mix of affordable and market rate apartments above retail businesses. The project is in a pedestrian friendly location with local shopping and access to buses and trains. Residents will have onsite parking, laundry

facilities and a children's play area. The project's namesake, a red brick church, stands to the west with its nineteenth century spire creating an attractive focal point for the neighborhood. Drawing from its context, the Brick Church Commons buildings will be clad in block at the ground floor level and red brick above.

All apartments in the complex are two bedroom with generously sized kitchens and living rooms. High ceilings and open floor plans allow daylight to wash through the spaces. Of the 104 units, 34 will be for low income residents while 68 will be market rate. The affordable units have 1-1/2 baths, while the market rate units have two full baths and an added den.

Green Features

All kitchens, living rooms, dens and hallways have wood flooring made of recycled or post industrial wood. Base molding is also made from post industrial wood.



Indoor air quality in the buildings will benefit from the minimal use of carpet, provided in bedrooms only, and from the water based wood floor finish which has lower volatile organic compound content than oil based sealants. Bathrooms and laundry rooms have ceramic tile floors and the building lobbies have granite floors. To maintain a healthier indoor environment each apartment is airtight from its neighbor and has its own continuous ventilation system. An inline fan draws air from the bathrooms and kitchen and exhausts it out the side wall of the building. The system is designed to exhaust the air in each apartment and replace it with outdoor air at a rate of .35 air changes per hour. A separate system provides fresh air to the corridors in the building. Outside air is drawn in with a central fan and distributed through hallway supply registers. The air is exhausted through the apartment systems.

Energy Efficient Features

Buildings 1 and 2 at Brick Church Commons are 4 story wood frame structures. These buildings have R-13 fiberglass insulation inside the wall cavity. Building 3 is 5 stories framed in steel studs. To avoid conductive heat losses through the steel framing, Building 3 uses 2" R-14.3 rigid polyisocyanurate foam insulation on the outside of the studs. The top floor ceiling of building 1 is insulated with R-30 fiberglass insulation. In buildings 2 and 3 the roof has R-25 exterior polyisocyanurate rigid insulation above the roof deck. All three buildings are air sealed around window openings with minimally expanding foam to avoid infiltration losses. The windows are thermally broken aluminum framed double glazed low e windows.

Each apartment has a sealed combustion 90% efficient condensing gas furnace and a SEER 13 1.5 ton air conditioning unit. All ductwork is sealed with mastic for air tightness and insulated with R4.2 duct wrap insulation. Each apartment's heating and cooling system is controlled with programmable thermostats. Each building has central hot water heating provided by high capacity energy efficient sealed combustion gas water heaters. Hot water is run in a continuous loop throughout the buildings to provide hot water almost immediately when called for at a fixture.

This avoids wasted water and energy. All kitchen appliances are Energy Star and most light fixtures use compact fluorescent lamps. The Brick Church Commons buildings will all comply with the NJBPU New Jersey Energy Star Program.

Lessons Learned

The design for Building 1 called for exterior rigid insulation on the roof. Because of a budget constraint fiberglass insulation was installed at the ceiling of the top floor apartments. One of the reasons the exterior insulation was suggested by the sustainable consultant was that it would keep the rood deck warm and avoid condensation from forming beneath it. As a result of the fiberglass insulation being installed, the roof has to be mechanically ventilated causing design changes at the roof and continued energy use for the ventilation fans.



Brick Church Commons, Building One

Project Summary Brick Church Commons

OWNER/DEVELOPER

RPM Management, LLC

ARCHITECT/ENGINEER

John C. Inglese

CONTRACTOR

RPM Contracting, LLC

SUSTAINABLE DESIGN CONSULTANT

Joseph Lstiburek, Building Science Corp.

PROPERTY MANAGEMENT

RPM Management, LLC

FUNDING

Construction Loan	\$14,079,779
City of East Orange UEZ	\$250,000
City of East Orange UDAG/HOME	\$1,000,000
Essex County	\$1,000,000
Deferred Developer Fee	\$2,100,000
NJ Green Homes Office	
Total	\$18,429,779

DEVELOPMENT TYPE

Hi-rise and mid-rise multifamily residential commercial first floor

RESIDENT PROFILE

Families and individuals at low income (34 units) and market rate (68 units)

DENSITY

38 units per acre.

DEVELOPMENT PROFILE

Type	#/Units	Approx. SF	Rent
2BR	34	1000	\$754
2BR with den	68	1300	\$1098

CONSTRUCTION TYPE

Two four story and one five story new construction block and frame

DEVELOPMENT COSTS

Property acquisition costs	600,000
Construction costs	16,275,000
Professional Services	422,000
Financing and other costs	1132779
Total	\$18,429,779

Energy Efficient/Green features
Building Envelope
Buildings 1 and 2 Walls –R-13 fiberglass insulation; Building 3 Walls - R14.3 exterior polyisocyanurate rigid foam insulation
Building 1 Ceiling –R-30 fiberglass insulation ; Buildings 2 and 3 R25 exterior rigid polyisocyanurate foam insulation
Windows – thermally broken aluminum, low e, argon filled
Air sealing measures - Air tight drywall approach, minimally expanding foam sealant at window rough openings.
Mechanical systems
Heating system - 90% efficient condensing gas furnaces
Air conditioning - SEER 13 1-1/2 ton AC units
Programmable thermostats
Central hot water with high efficiency gas fired water heaters. Hot water circulated in a continuous loop
Appliances/lighting
Energy Star refrigerator and dishwasher
Indoor Lighting - most fixtures use compact fluorescent lamps
Green/recycled materials practices
Recycled or post industrial wood flooring
Wood base molding made from postindustrial wood
Indoor air quality measures
Wood flooring in kitchens, living rooms dining rooms and hallways
Water based urethane finish on wood floors
Ceramic tile in bathrooms
Granite tile in lobbies
Mechanical compartmentalized ventilation in apartments and public hallways
Water Conservation
Drought resistant landscaping
Transportation
Accessible to train and buses